The Low Response Score (LRS) and Response Outreach Area Mapper (ROAM): Tools to identify, plan for, and manage hard-to-survey areas

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FOR IMMEDIATE RELEASE: WEDNESDAY, FEBRUARY 07, 2018

Census Bureau Releases the Response Outreach Area Mapper Web Application

February 07, 2018

Release Number: CB18-TPS.06

RSS Email SMS

Feb. 7, 2018 — Today, the U.S. Census Bureau released the Response Outreach Area Mapper (ROAM) web application. This interactive map makes it easier to identify areas that typically have low response rates for censuses and surveys.

Community planners and local officials can use this information to plan, focus and allocate resources for encouraging response to the 2020 Census. The tool also allows the Census Bureau to tailor outreach efforts and to plan resources, including hiring staff with the right language skills.

These efforts can lead to higher response rates for the 2020 Census, making the census more accurate and more efficient. Census results affect a community's voice in government, how much funding the community receives, and how it plans for the future.

The ROAM tool provides tract-level data on the area's low response score (predicted mail non-response rate) and information about its people and households from the American Community Survey, including poverty status, education level, race, Hispanic origin and language ability.

ROAM can also be used to:

- Identify areas where special outreach and promotion efforts could be considered to increase participation in the variety of surveys the Census Bureau conducts.
- Link spatial map data files to create thematic maps showing low response scores in conjunction with demographic data.
- Generate reports, cross tabulations and simple analyses of demographic data.
- Identify hard-to-count tracts by response score and according to specific parameters (e.g., tracts within a certain county).

No news release associated with this product. Tip sheet only.

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Related Information

Blog entry

Introduction

- In 1990s Census Bureau developed a Hard to Count Score (HTC)
- Households in each census tract assigned a score
- The higher the score, the harder to count
- Field Division used the score to make hiring decisions and resource allocations
- Partnership Specialists used the score in 2000 and 2010 Censuses to identify areas requiring extra effort
- *For 2020 Census a new hard-to-survey metric has been developed: the Low Response Score (LRS)*

For methodology of LRS see…

Erdman, C. and N. Bates (2017). The Low Response Score (LRS): "A Metric to Locate, Predict, and Manage Hard-to-Survey Populations", *Public Opinion Quarterly*, Volume 81, Issue 1, 1 March 2017, pp. 144–156.

Low Response Score

- LRS = predicted level of Census self non-response at the tract level
- Values from 0-100
- So, for example, if LRS=25, we are estimating that 25% of households in that tract will not self-respond to the Census
- LRS is updated yearly

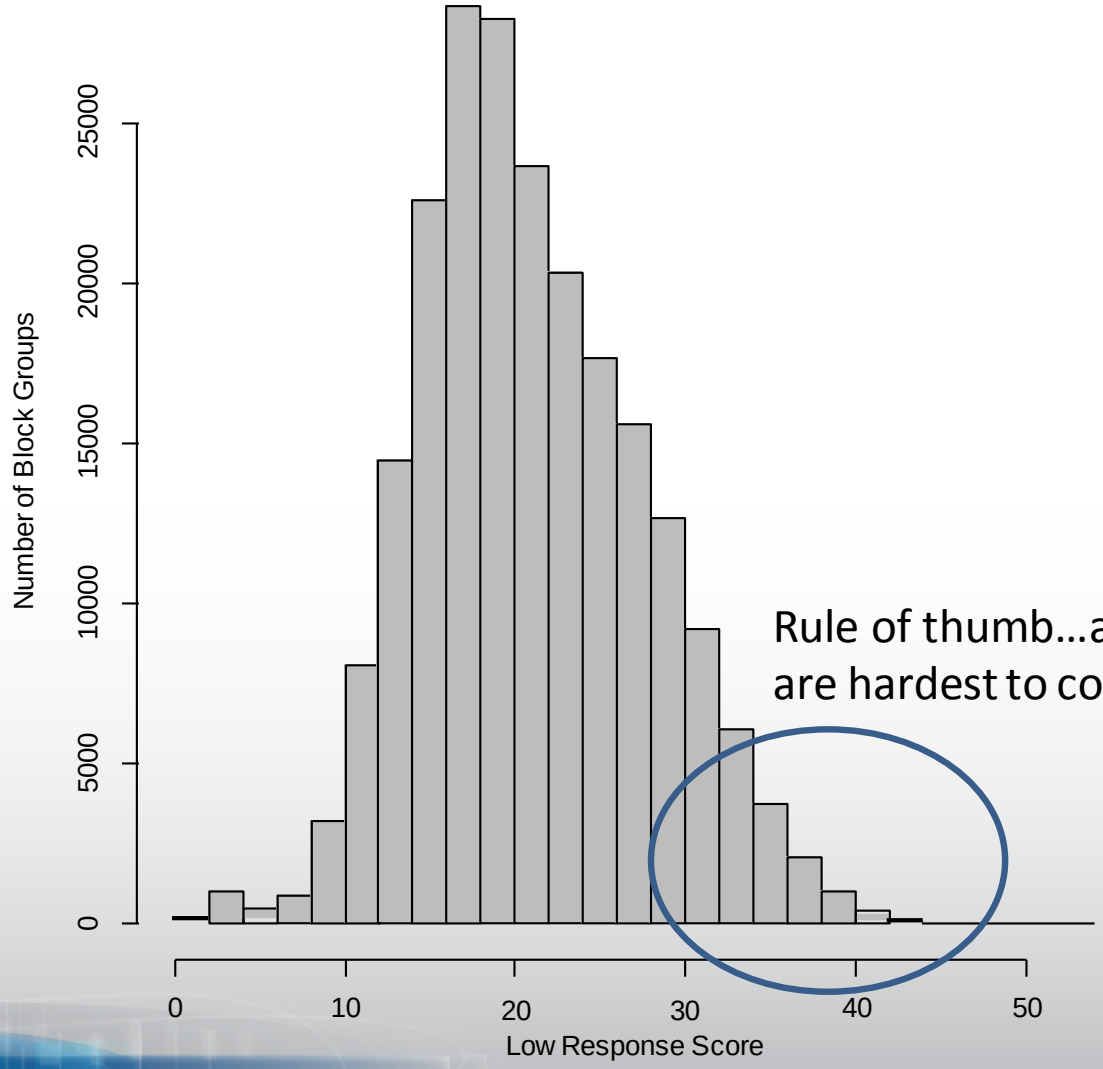
Low Response OLS Linear Model

	Coef	Sig		Coef	Sig
(Intercept)	10.29	***	Renter occupied units	1.08	***
Ages 18-24	0.64	***	Female head, no husband	0.58	***
Non-Hispanic White	-0.77	***	Ages 65+	-1.21	***
Related child <6	0.46	***	Males	0.09	***
Married family households	-0.12	***	Ages 25-44	-0.06	
Vacant units	1.08	***	College graduates	-0.32	***
Median household income	0.24	***	Ages 45-64	-0.08	*
Persons per household	3.44	***	Moved in 2005-2009	0.09	***
Hispanic Any Race	0.41	***	Single unit structures	-0.52	***
Population Density	-0.40	***	Below poverty	0.11	***
Different HU 1 year ago	-0.12	***	Ages 5-17	0.17	***
Non- Hispanic Black	-0.04	**	Single person households	-0.24	***
Not high school grad	-0.06	***	Median house value	0.71	***

Sig: * * * $p < .001$; * * $.001 \leq p < .01$; * $.01 \leq p < .05$ R-squared: 56.10%, n = 217,417

Main Effects only, no interaction terms

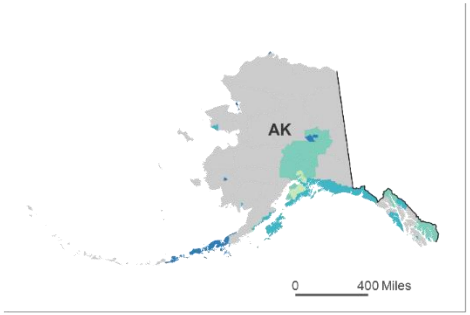
Distribution of the LRS



Rule of thumb…areas with LRS = >29 are hardest to count?

Source: Erdman and Bates, 2017

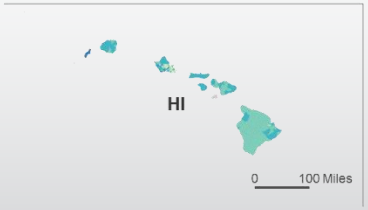
Low Response Score (LRS)
by Census Tract

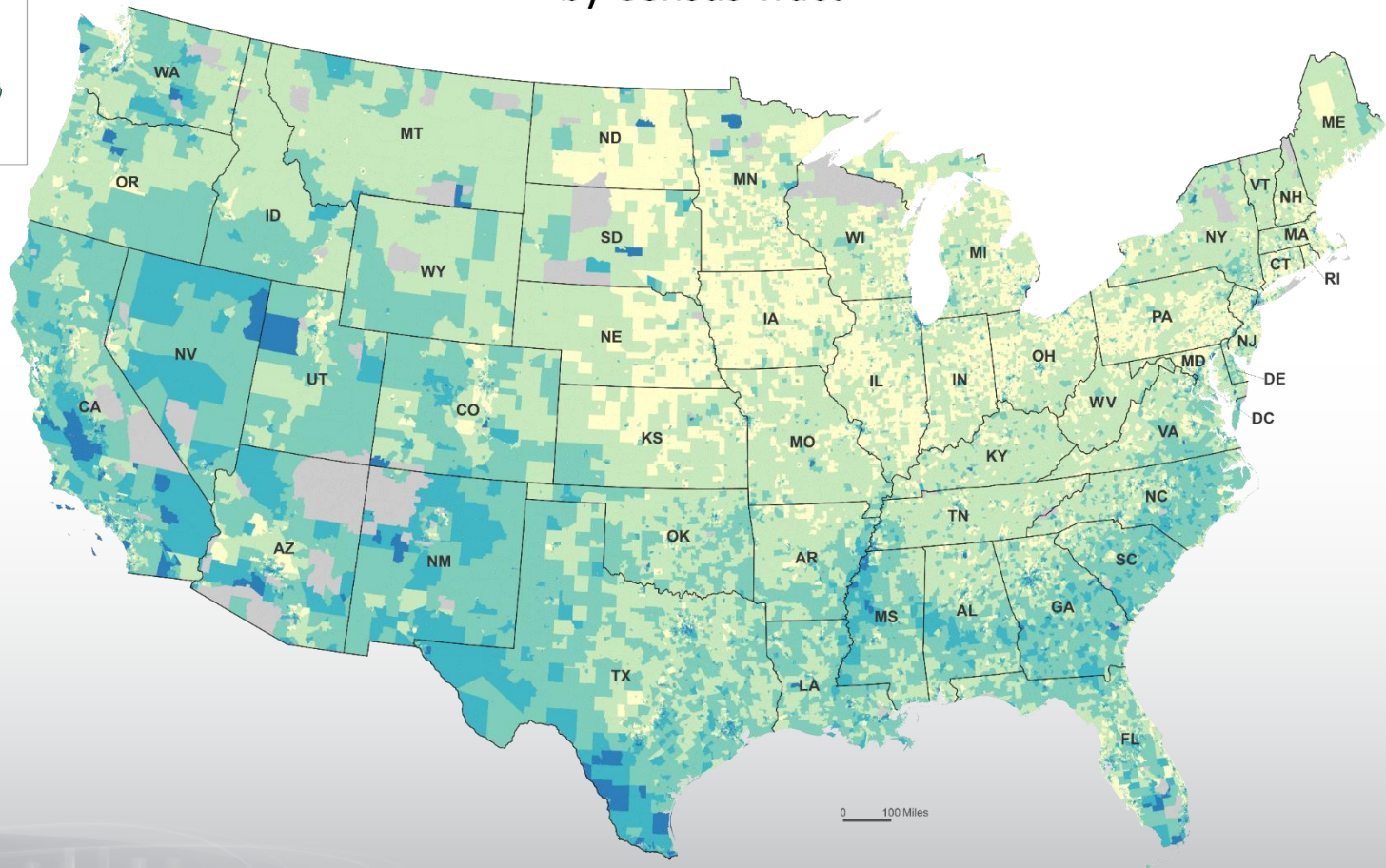


Predicted Mail Non-Response Rate (%)

- 30.0 to 57.8
- 25.0 to 29.9
- 20.0 to 24.9
- 16.0 to 19.9
- 0.0 to 15.9
- Not calculated

Source: U.S. Census Bureau,
2016 Planning Database,
2014 Cartographic Boundary Shapefiles





United States Census Bureau
U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
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How do I access the LRS?

- We have built a Web browser-based LRS application
- Branded as: *Response Outreach Area Mapper* (ROAM) www.census.gov/roam
- Public interface to map and display characteristics of hard-to-survey areas from the PDB
- ROAM displays census tracts indicating hard-to-survey areas (darker color = higher LRS = harder-to-count)
- ROAM also displays selected variables describing the census tracts
- Allows users to set customized parameters and pull extracts

LRS limitations/cautions

- Only considers mail self-response – 2020 Census will offer internet, phone AND mail
- Some tracts have small Ns in mailback universe, e.g. Indian reservations, very rural areas
- If LRS is extremely high, take a closer look

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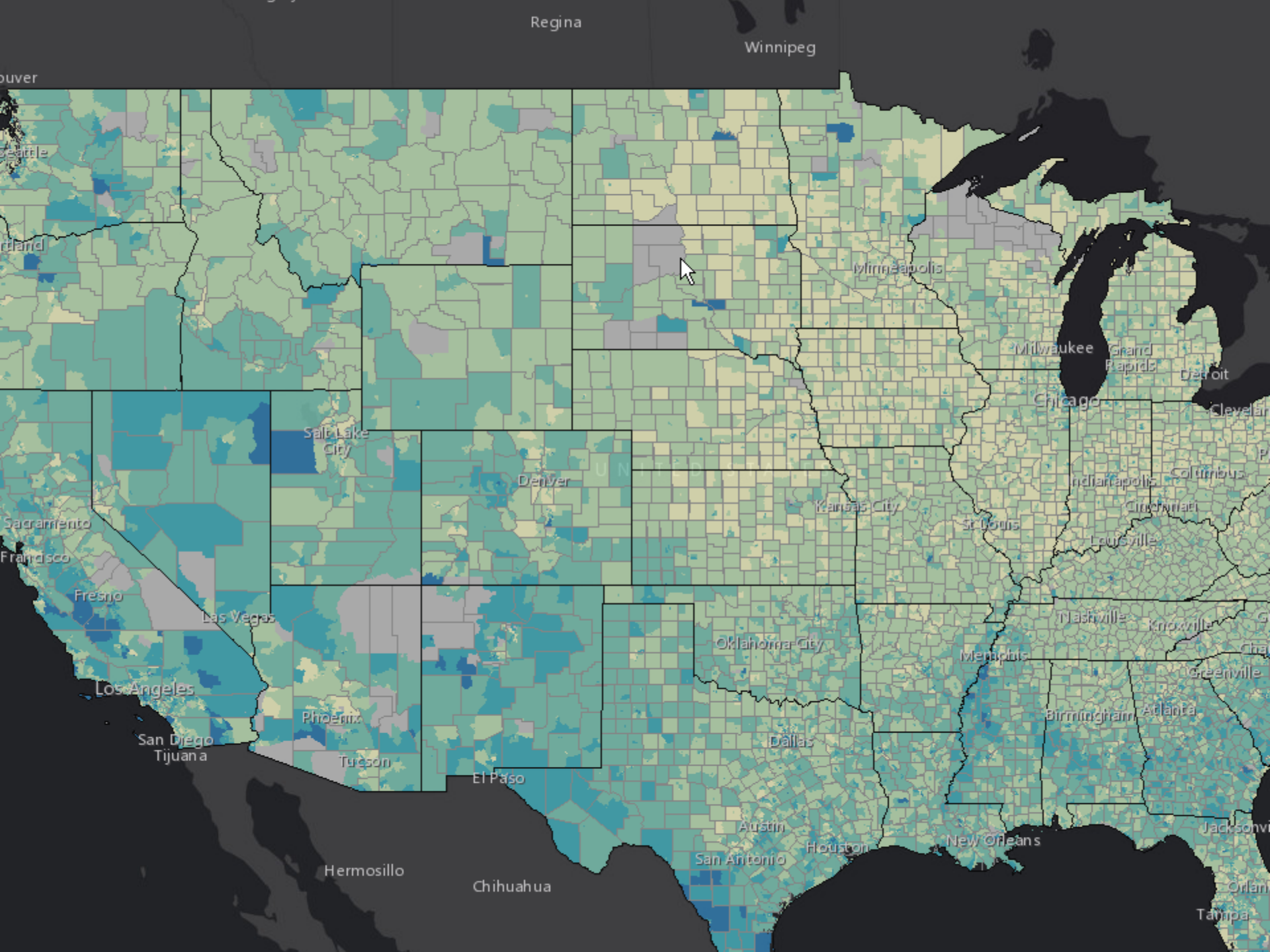
ROAM Demonstration

www.census.gov/roam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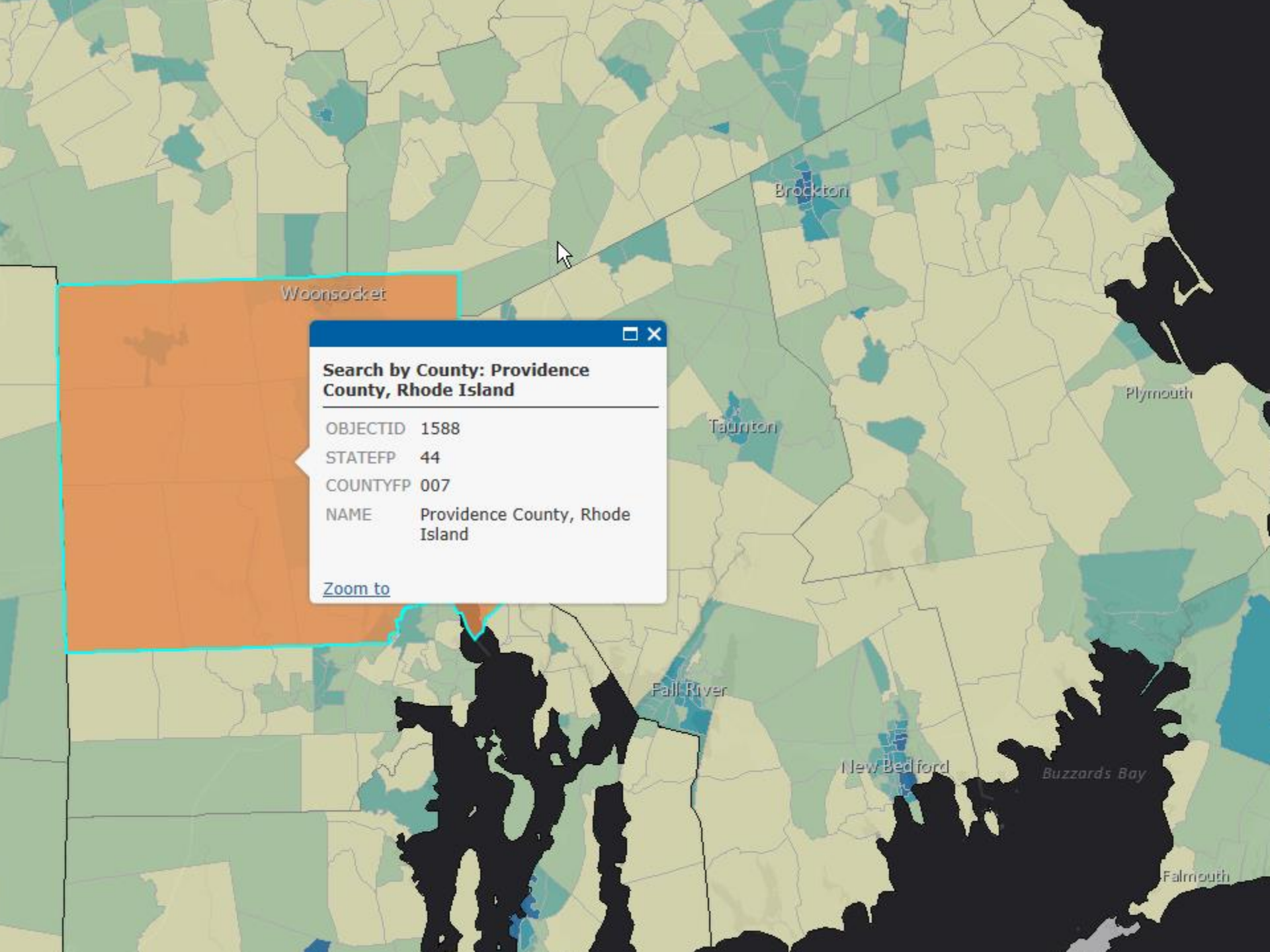
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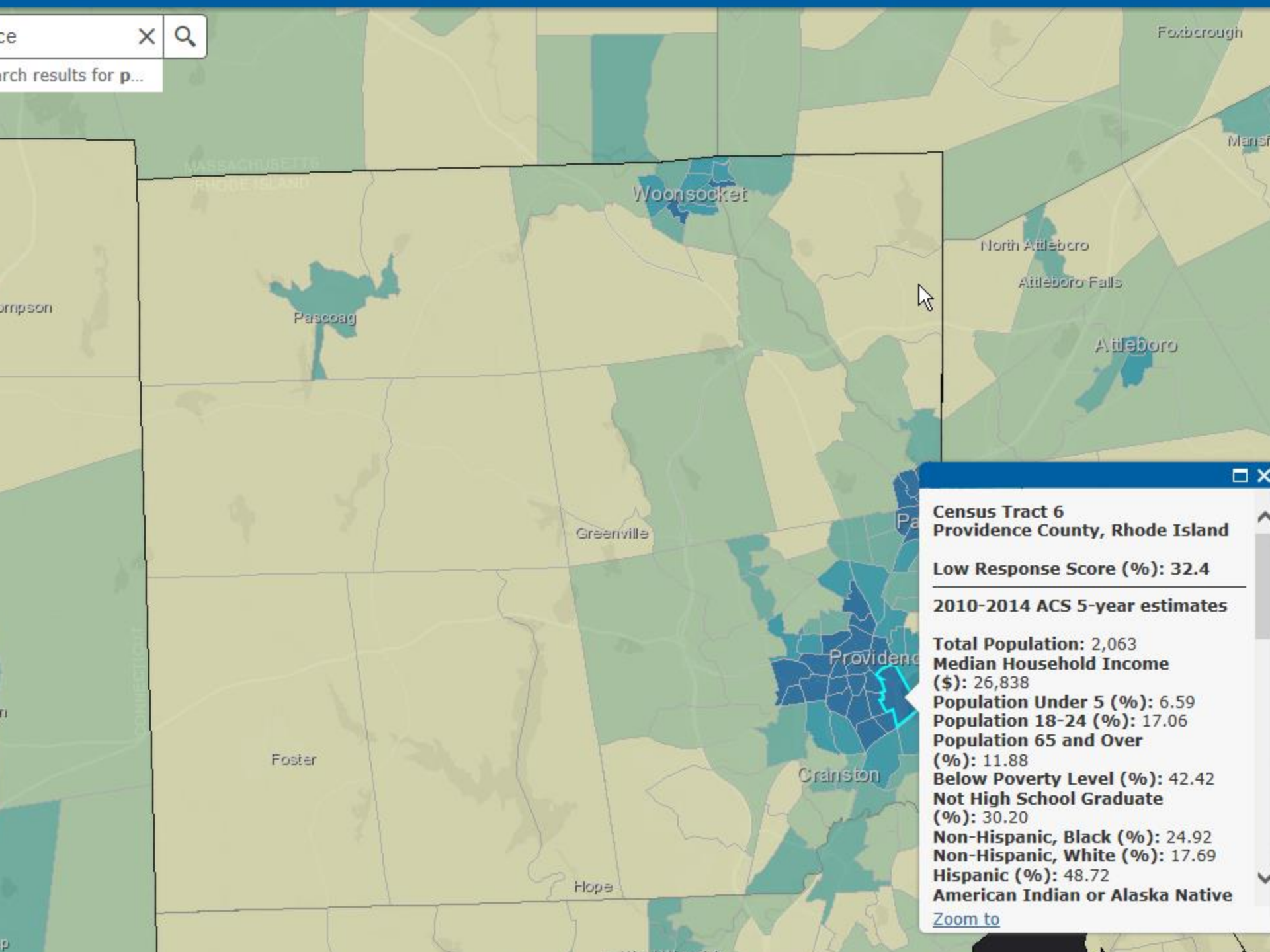
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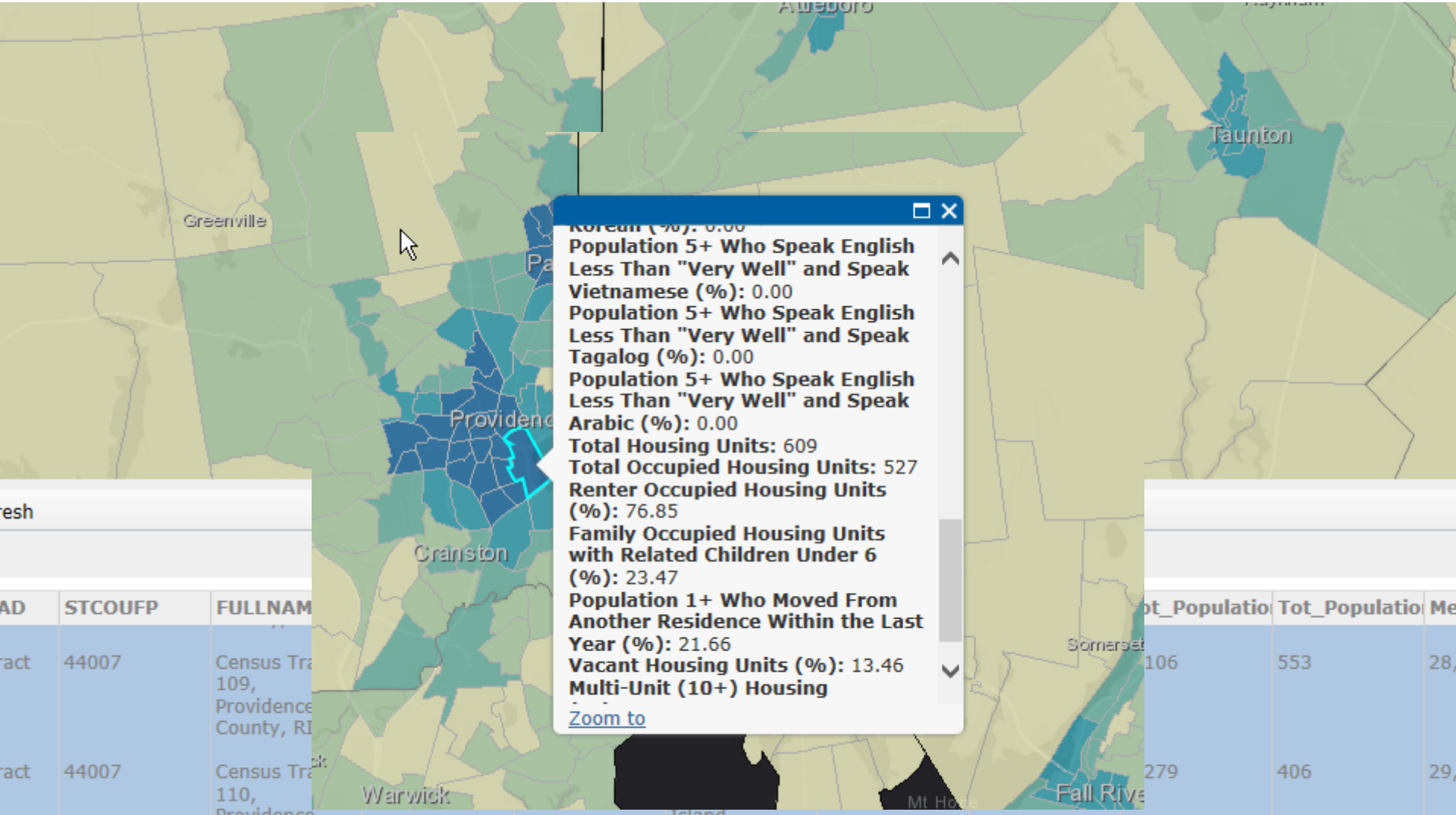
Providence County, Rhode Island
Low Response Score (%): 32.4
2010-2014 ACS 5-year estimates
Total Population: 2,063
Median Household Income ($): 26,838
Population Under 5 (%): 6.59
Population 18-24 (%): 17.06
Population 65 and Over (%): 11.88
Below Poverty Level (%): 42.42
Not High School Graduate (%): 30.20
Non-Hispanic, Black (%): 24.92
Non-Hispanic, White (%): 17.69
Hispanic (%): 48.72
American Indian or Alaska Native
Zoom to



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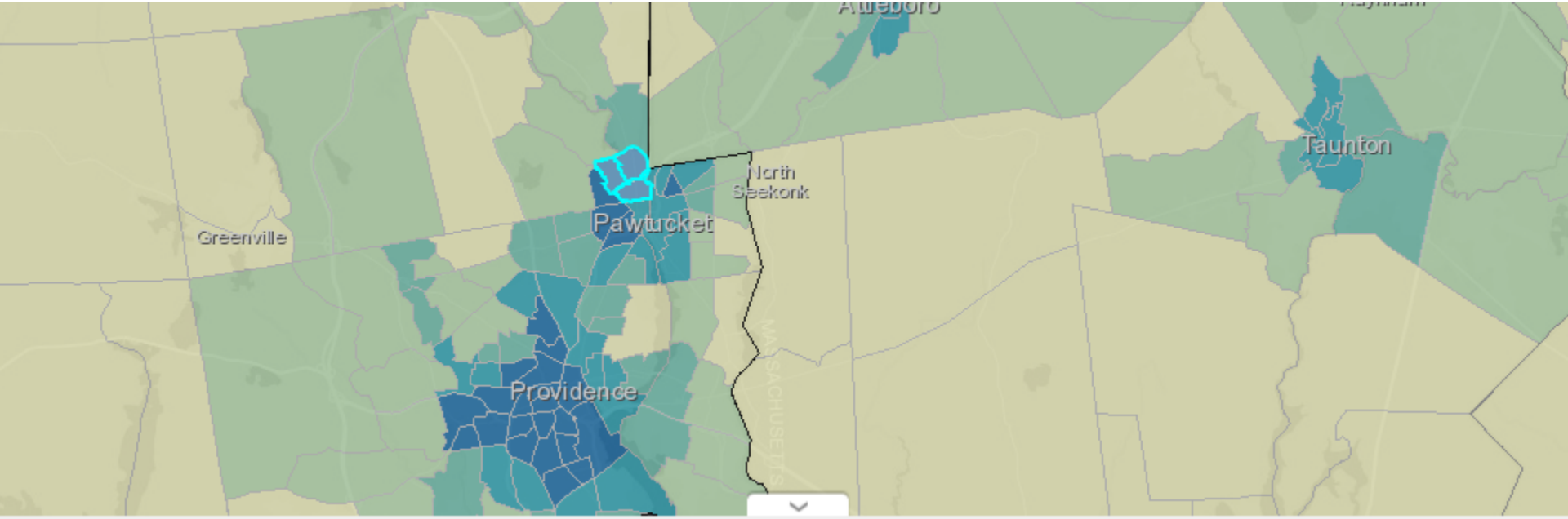
ract	44007	Census Tra 109, Providence County, RI							106	553	28,
ract	44007	Census Tra 110, Providence County, RI							279	406	29,



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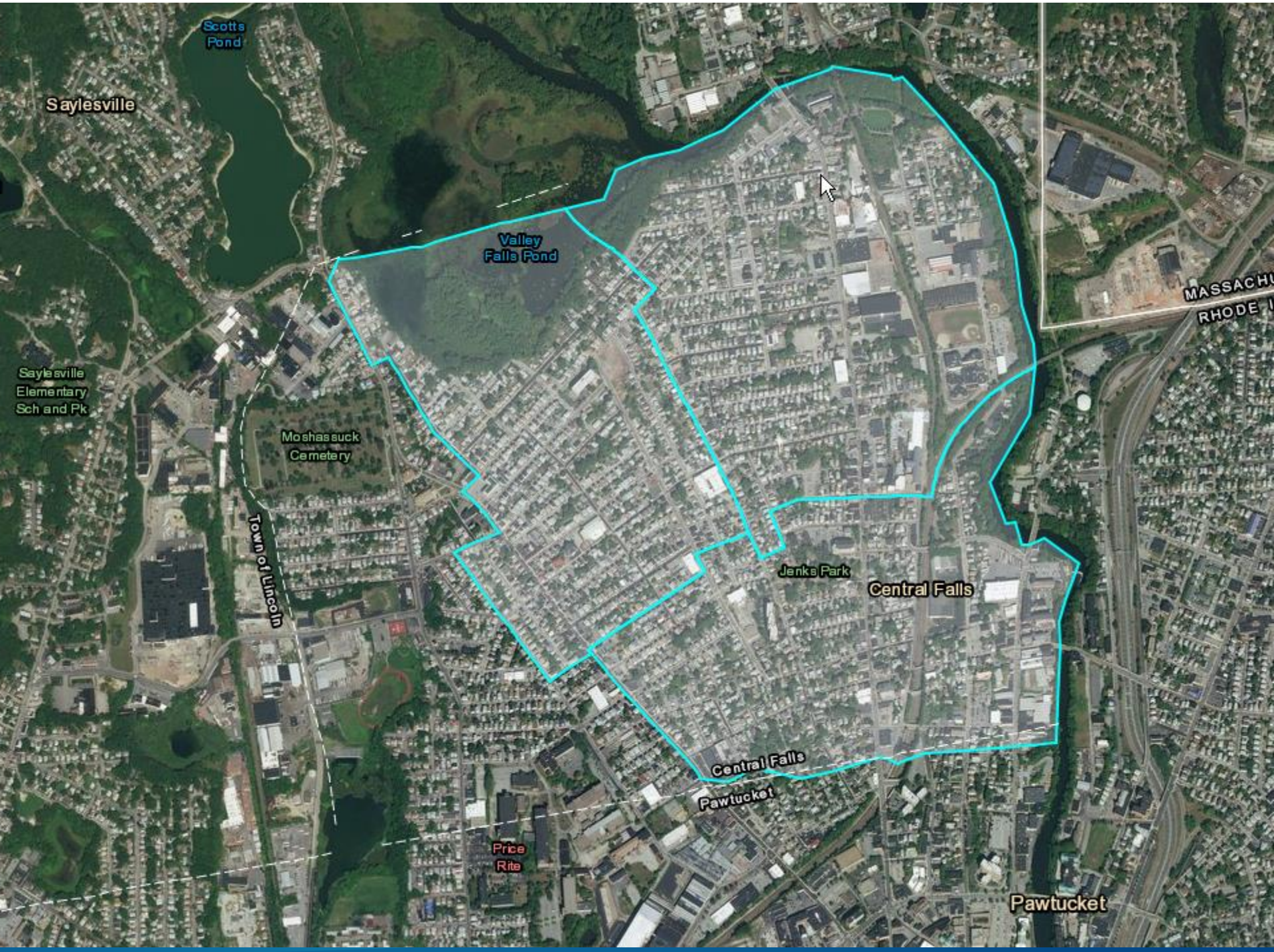
AD	STCOUFP	FULLNAME	COUNAME	STNAME	STCOUNAME	Low_Respons	Mail_Return_F	Tot_Populatio	Tot_Populatio	Me
ract	44007	Census Tract 109, Providence County, RI	Providence County	Rhode Island	Providence County, Rhode Island	30.6	70.8	5,106	553	28,
ract	44007	Census Tract 110, Providence County, RI	Providence County	Rhode Island	Providence County, Rhode Island	32.1	70.3	5,279	406	29,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Valley Falls Pond
MASSACHU
RHODE
Saylesville Elementary Sch and Pk
Moshassuck Cemetery
Town of Lincoln
Jenks Park
Central Falls
Central Falls
Pawtucket
Price Rite
Pawtucket

Mobile Device Access

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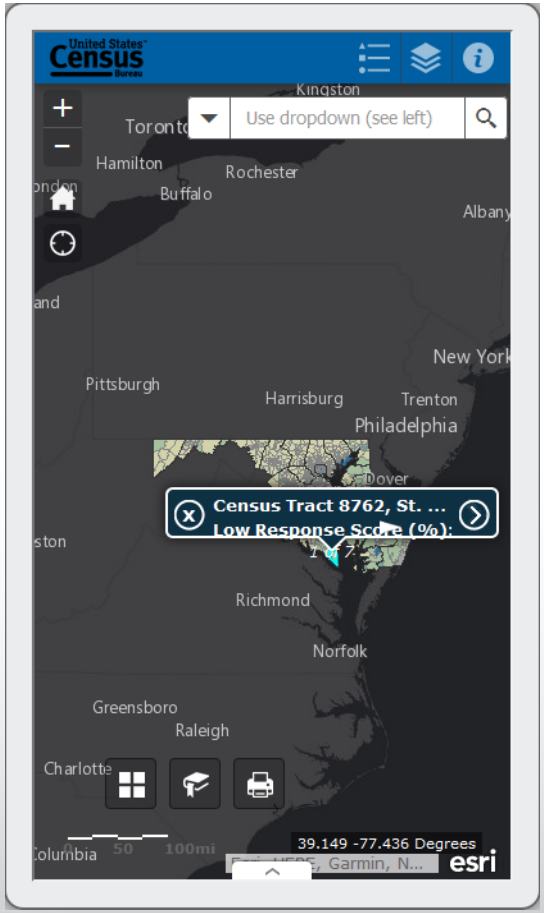

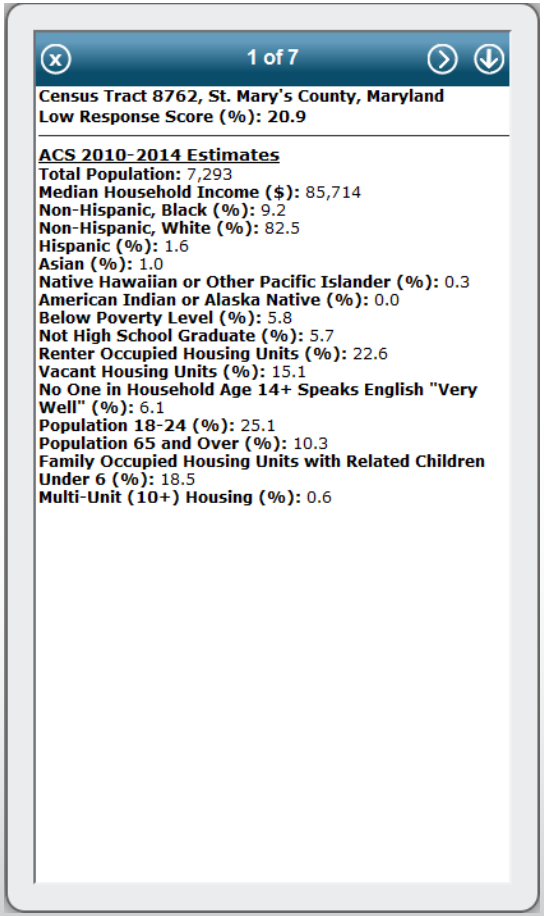

Mobile Device Access

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